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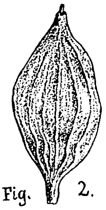

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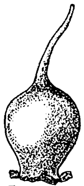

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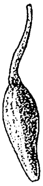

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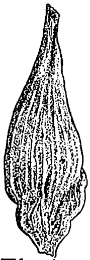

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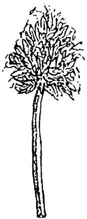

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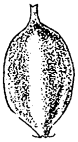

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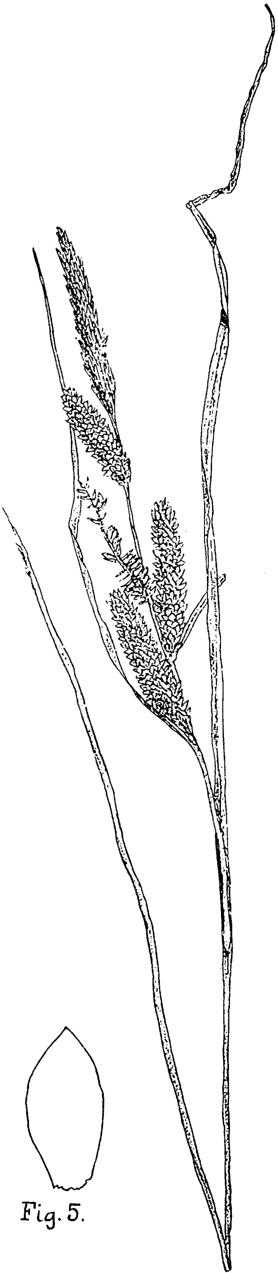

Fig. 5.

Fig. 1.

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BAILEY ON CAREX.

BOTANICAL GAZETTE.

VOL. X. JANUARY 1885. No. 1.

Notes on Carex.—III.

(WITH PLATE.)

BY L. H. BAILEY, JR.

1. CAREX NERVINA, n. sp., connecting the groups *Fœtidæ* and *Vulpinæ*: Culm flat and weak, smooth, striate, about 18 inches high from a woody root; leaves ample, broad, striate above, minutely nodulose below, the upper equalling the culm, the lower short (½ to 3 inches long) from loose truncate sheaths; spikes densely aggregated into a fulvous head (½ to ¾ inch long) which is subtended by one or two setaceous bracts of half its length; perigynium lanceolate, spongy and compressed at the base, firm in texture, very strongly many-nerved, marginless and smooth throughout, about the length of the very thin acute scale; achenium oval (Figs. 6 and 7).—Summit Camp, California, July 10, 1870.—*Dr. A. Kellogg* In aspect much like *C. Hoodii*, Boott, but at once distinguished by its smooth, firm and strongly nerved perigynium. The perigynium is somewhat like that of *C. stipata*. In the specimens I have examined the spikes, of which the head is composed, are compound at the base, and the basal branches are all staminate. Most of the top of the spike is staminate, and the two or three pistillate flowers appear as if borne in the center of a continuous staminate spike.

2. CAREX MURICATA, L., var. CONFIXA, n. var. Differs from the usual forms of the species in its very slender and mostly prolonged culms (which are 1 to 2½ feet high), and its oval or oblong continuous head of spikes, and in an habitually narrower perigynium.—*C. Hoodii* of authors, not Boott. N. W. Wyoming (*C. C. Parry, 281*); Wahsatch Mts., Utah (*Watson 1228*); California, Toulumne River (*Brewer, 1702* and *1772*, and *1069 Kellogg & Harford*); Union Co., Oregon (*Cusick, 1182*); British Columbia (*Macoun*). Very like *C. Hoodii*, Boott, and heretofore confounded with that species, into which the stouter

forms may pass. It also approaches forms of *C. cephaloidea. C. Hoodii*, as I understand the species, is characterized by its much stouter culms, its much heavier, browner and more compact heads which are made up of many-flowered, chaffy, linear or ovate more or less pointed spikes, and more upright perigynia which are covered by the large scales. The brown-and-green and truncate characters of the spikes, and the spreading, greenish perigynia of the var. *confixa* are not found in *C. Hoodii* in the few specimens I have seen of that species. *C. Hoodii* occurs in California, Oregon and Kamtschatka.

3. CAREX DECIDUA, Boott, is one of the least known of our Carices. The species was founded upon specimens from Terra del Fuego and the Falkland Islands, and was first published in the Linnæan Transactions, XX, 119 (1846). Shortly after, *C. Andersoni* was published by the same author in Hooker's Flora Antarctica, II. 364. This species differed from *C. decidua* in its larger size and compound spikes. In Boott's Illustrations, I, 163 (1858), the two species were united. Collectors upon our own Pacific coast had then found the species, so that its habitat was extended to "California, *Trubner* [*Thurber?*]. Oregon, *Douglas, Nuttall, Hinds.*" The Carices collected by Dr. J. M. Bigelow in Lieut. Whipple's Exploration were submitted to Dr. Boott, and his determinations, with the other determinations of that collection, were published in vol. IV of the Pacific R. R. Reports. *C. decidua* is there given as occurring in "Mountains near Oakland, Los Angeles, Duffield's Ranch, Sierra Nevada, and other parts of California." One specimen of Bigelow's collection named *C. decidua* is in Herb. Gray, but it is *C. aquatilis.* Mr. N L. Britton has loaned me all the specimens of *C. decidua* in the Torrey Herbarium. They are all of Bigelow's collection, and all on two sheets. One sheet is labelled "Oakland and Los Angeles." A part of the specimens are unripe; the remainder are *C. nudata*, W. Boott. The specimens on the other sheet, from "Sierra Nevada (Duffield's Ranch)," are entirely too young to be determined. Evidently Bigelow's specimens have been mixed. If the collection contained *C. decidua* it must be be at Kew. In Herb. Gray are three specimens from "N. W. Coast, Mr. Hinds, Herb. Bentham," and labelled *C. Goodenovii*, Gay, in Dr. Boott's handwriting (Figs. 1–5). These specimens answer almost perfectly the figures and final description of *C. decidua* given by Dr. Boott, and they are no doubt a part of the specimens referred to that species in the Illustrations. These specimens are the only ones I know from North America. I have an imma-

ture and depauperate specimen from Terra del Fuego, named by Dr. Boott, but it affords little aid in the determination of the species. Its perigynium is almost identical with that of *C. nudata.* There are no mature South American specimens of *C. decidua* in Herb. Gray, although a specimen from "Extra-tropical South America," collected by Dr. Cunningham, is probably to be referred to *C. nudata.* It appears probable that the original *C. decidua* was confounded with William Boott's *C nudata.* The figures in the Illustrations are mostly those of the former *C. Andersoni.* Hinds' Oregon specimens agree with the figures of the original *C. decidua.* These Oregon specimens and the plants figured by Dr. Boott are distinguished from *C vulgaris,* their nearest ally, as follows: *Spikes heavier; scales and perigynia deciduous; perigynium conspicuously stipitate and strongly nerved.*

No. 598 of Hall's Oregon Collection referred to *C. decidua* by Olney, and No. 594 referred to "*C. elata,* All. (*C. stricta,* Good.)," are probably the same, and evidently an undescribed species.

C. nudata, W. Boott, Bot. Cal II, 241, is distinguished from *C. vulgaris* by its fibrillose sheaths and deciduous perigynia, and from both that species and *C. decidua* by its long, thin, finely punctate and lightly nerved perigynium, which is empty in the upper half. Its spikes are much more slender than in *C. decidua,* and with the present material it appears distinct enough from that ambiguous species.

4. CAREX MICROGLOCHIN, Wahl., a North European and Greenland species, occurs in Colorado. It is 607 Hall and Harbour, the *C. pauciflora* of Porter and Coulter's Flora of Colorado. The specimens in the Gray Herbarium are labelled *C. oligantha,* Boott, in Francis Boott's handwriting. *C. oligantha* grows in Terra del Fuego. It differs essentially from *C. microglochin* in the fewer flowers, curved and conspicuously stipitate perigynium, and in the much deeper cavities in the rachis of the spike. These characters are strongly marked in specimens which I have from Terra del Fuego, but they do not appear in Hall and Harbour's specimens. Olney, in his notes which accompanied the fourth fasciculus of his *Exsiccatæ,* correctly referred Hall and Harbour's specimens to *C. microglochin.* The species is very much like *C. pauciflora,* and likely to be confounded with it, although the principal distinguishing character is decisive and infallible. The orifice of the mature perigynium of *C. pauciflora* is tightly closed by the *stiff and persistent style;* that of *C. microglochin* by a *stiff racheola which springs from the in-*

side of the perigynium beneath the achenium. A careful dissection of the perigynium at once reveals this distinction. *C. microglochin* is also smaller than *C. pauciflora,* the perigynium is less spindle-shaped and more strongly reflexed. Hall and Harbour's specimens are larger than the European and Greenland specimens, and it was probably due to this fact that Dr. Boott referred them to the very similar *C. oligantha.* I do not know that *C. pauciflora* occurs in the United States west of the Mississippi, but Drummond collected it in the Rocky Mountains of British America.

5. CAREX GLOBOSA, C. UMBELLATA and C. ROSSII have been endlessly confounded at the West. After a careful study of many specimens from all parts of the West, the following characters appear to be general and decisive:

C. GLOBOSA, Boott, Trans. Lin. Soc. XX, 125. *Rootstock* woody, mostly *perpendicular,* or nearly so; *culm one, slender,* angled and scabrous, 6 to 12 *inches high; leaves* many, *broad* (2 lines wide), *upright, mostly flat or flattish,* usually exceeding the culms; *staminate spike* ½ to 1 *inch long, conspicuous; pistillate spikes* usually several, 2 to 8 flowered, *the upper one borne at or near the base of the staminate spike, the remainder on very slender radical or sub-radical peduncles; perigynium pear shaped* (rarely nearly elliptic),*very gradually tapering from a rounded summit into a stipitate very strongly-nerved base,* sparsely hirsute, the *short, straight beak slightly toothed.*—California; *Nuttall; Bolander,* Nos. 20, 2298 and 6196; *Brewer,* No. 303.

C. UMBELLATA, Schk. Riedgr. II, 75. *Rootstock* mostly *horizontal; culms many, mostly very short and crowded and concealed among the leaves,* sometimes 3 to 4 inches long; *leaves* many, *mostly narrow, generally short, stiff and curved,* sometimes weak and straggling and 6 inches long; *staminate spike* ½ *inch or less long, not usually distinct and conspicuous; pistillate spikes usually crowded among the bases of the leaves, sometimes one or more of them exserted and clustered with the staminate spike, perigynium globose elliptic, more or less flattened, nerveless or nearly so, tightly enclosing the achenium,* clothed with sparse, short hairs (rarely smooth), *margined by two prominent ridges which terminate in a flattened, sharply cut beak as long as the body.*—Frequent on dry, sandy soil throughout the Northern States east of the Mississippi and northwestward to the Rocky Mountains of British America; also in Indian Territory.

Var. BREVIROSTRIS, Boott, Illustr. II, 99. *Beak much shorter and minutely toothed, the perigynium rounder or somewhat 3-*

sided.—Rocky Mountains of British America; near Golden City, Col., and Mogollon Mountains, New Mexico (*Rev E. L. Greene*); Cisco, Cal. (*Dr. A. Kellogg*); Plumas Co., Cal. (*Mrs. R. M. Austin*).

C. NOVÆ-ANGLIÆ, Schw. An. Tab. More or less cespitose; *culms few, very slender, often reclining; leaves narrow, weak*, commonly as long or longer than the culms; staminate spike ½ inch or less long, often inconspicuous; *pistillate spikes small* (3 to 8-flowered), *more or less globular, some of the lower on radical peduncles, the upper one, or two, close to the staminate spike and subtended by a narrow green bract as long or longer than itself; perigynium purple or very dark green, triangular or round obovoid, densely clothed with short hairs, the beak half or less the length of the body*, stout and slightly toothed —Dry hills from Northern New England to Greenland and Alaska; also, in Washington Territory (1145 *Brandegee*, 1883), and in Eastern Oregon (*W C. Cusick*), and probably *Hall's* No. 603 from Oregon.

C. deflexa, Hornem , is the Greenland form of the species, differing from the Southern form in its much smaller size, greater relative length of culm, and in the pistillate spikes being more aggregated. I have this form from Alaska and Washington Territory (1145 *Brandegee*), and Oregon (*Cusick*). *C. brevipes*, W. Boott, *C. globosa*, var. *brevipes*, W. Boott, appears to be a large and triangular-fruited form of this type of *C. Novæ-Angliæ*. Drejer unites *C. Novæ Angliæ* with *C. pilulifera*, L., as var. *deflexa*. It appears to me at present that the stiff and long culms, the globular and mostly many-flowered spikes and the much rounder perigynium of *C. pilulifera* separately it specifically from *C. Novæ Angliæ*.

Var. ROSSII. *Culms and leaves firm and upright; the leaves often very strict and nearly always longer than the culms; pistillate spikes 1 to 4-flowered, linear, upright, light colored; perigynia loosely alternate on a zigzag rachis*, the flattened beak longer or shorter than the body, *less hairy than in the species.*—*C. Rossii*, Boott in Hook. Fl. Bor. Am. II, 222.—Colorado (*Vasey*, 592 A, perhaps 592; *Hall and Harbour*, 620; Twin Lakes, 1058 *Wolfe*); Oregon (*Cusick*); New Mexico (889 *Fendler*); Utah, Cottonwood Cañon (1260 *Watson*), and in the Rocky Mountains and Great Plains of British America (*Drummond, Macoun*).

C. Novæ-Angliæ, as outlined above, includes a wide variety of forms, but between which I can detect no distinguishing characters.

6. SECTION PHYLLOSTACHYS, Carey, Gray's Manual, may be defined as follows: Spikes androgynous, staminate above. Pistillate flowers few, often remote, usually on a more or less zigzag rachis. Scales mostly prolonged and leaf like. Perigynium smooth or slightly hispid above, mostly tightly enclosing the perigynium, the beak, if any, straight.

Under this definition should be included six species, all but the type species exclusively American. These are *CC phyllostachys*, Meyer, *multicaulis*, Bailey, *Geyeri*, Boott, *Steudelii*, Kunth, *Backii*, Boott, *Willdenovii*, Schkuhr. These species naturally arrange themselves into two subordinate groups, which may be characterized as follows:

Phyllostachyœ. Culms all as long or nearly as long as the leaves; staminate flowers conspicuous; pistillate flowers very few and large; beak very short. Including *CC. phyllostachys*, *multicaulis*, *Geyeri*.

Bractoideœ. Culms mostly much shorter than the leaves; staminate flowers inconspicuous; perigynium small, the beak produced to half or more its length; scales very green and much dilated, often concealing the perigynia and readily mistaken for bracts. Including *CC. Steudelii*, *Backii*, *Willdenovii*.

In the Monograph of N. Am. Cyperaceæ, 404, Dr. Torrey thought that *C Willdenovii* and its allies might properly be separated under the generic name Phyllostachys. Carey made the name a sectional one.

EXPLANATION OF PLATE III.—Fig. 1, *Carex decidua*, Boott, from Northwest Coast (*Hinds*), about $\frac{3}{4}$ natural size. Fig. 2, a perigynium. Fig. 3, an achenium. Fig. 4, same, side view. Fig. 5, scale. The details are enlarged about eight diameters.

Fig. 6, Head of *Carex nervina*, Bailey. Fig. 7, perigynium. Fig. 8, achenium.

The Menominee Iron Region and Its Flora.—I.

BY E. J. HILL.

Wishing to compare the flora of that part of the northern peninsula of Michigan which lies within the basin of Lake Michigan with that farther south, or near the head of the lake, the Menominee Iron Region was selected for a fortnight's work. It is in the valley of the Menominee River, a stream that for a part of its course forms the boundary between Michigan and Wisconsin. In general, it takes a southeasterly direction, and enters Green Bay on its western side about half way between its